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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/380,994 09/13/99 TAKADA

M P23128USA

EXAMINER

MM92/0705

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ART UNIT

PAPER NUMBER

2841

DATE MAILED:

07/05/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

9/380994

Applicant(s)

Examiner

Cuneo

Group Art Unit

2841

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

☒ Responsive to communication(s) filed on 5/17/01

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

☒ Claim(s) 1-4, 7, 10-11, 14-15, 18 is/are pending in the application.

Of the above claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☐ Claim(s) _____ is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

☒ The proposed drawing correction, filed on 9/13/99 is ☐ approved ☒ disapproved.

☒ The drawing(s) filed on 9/13/99 is/are objected to by the Examiner

☒ The specification is objected to by the Examiner.

☒ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).

☐ All ☐ Some* ☐ None of the:

☐ Certified copies of the priority documents have been received.

☐ Certified copies of the priority documents have been received in Application No. _____

☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____

Attachment(s)

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s) US #7

☐ Interview Summary, PTO-413

☒ Notice of Reference(s) Cited, PTO-892

☐ Notice of Informal Patent Application, PTO-152

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Other _____

Office Action Summary

DETAILED ACTION

Election/Restriction

1. Applicant's election of claims 1-3 in Paper No. 8 is acknowledged. The traversal is on the ground(s) that the examiner did not identify the number of claims pertaining to each species and that there are no claims drawn to two of the species. This is not found persuasive because neither point is a requirement of a proper restriction. Applicant must identify the claims which read on the elected species, and the species are defined by the embodiments described in the specification, not the claims. Nevertheless, the present application is a national stage of a pct (under section 371). Therefore, a restriction requirement based on U.S. practice is improper. Therefore, the restriction requirement of paper #6 is hereby vacated and all of the pending claims are examined below.

With respect to the claims canceled in the response to the restriction requirement, applicant has stated in the response of 5/17/01 that the cancellation is unrelated to the restriction requirement.

Oath/Declaration

2. The supplemental page of the declaration which contains the numbers of the last two priority documents is missing from the application.

Drawings

3. This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed. See attached form PTO-948.

4. The drawings are objected to for the following reasons.

The figures are improperly cross hatched. All of the parts shown in section, and only those parts, must be cross hatched. The cross hatching patterns should be selected from those shown on page 600-84 of the MPEP based on the material of the part. See also 37 CFR 1.84(h)(3) and MPEP 608.02.

The drawing corrections submitted 9/13/99 are not approved because they do not correct the cross hatching of all of the figures. Applicant must include the changes in the correction of 9/13/99 in a new set of drawing corrections which corrects the cross hatching. Drawing corrections in compliance with MPEP 608.02(v) are required in response to this office action.

Specification

5. The abstract is objected to for the following reasons.

In the abstract, the words "constitute" and "constituted" in the context used are not understood.

Claim Objections

6. Please replace the word "via" with "with" or "by," and replace "leads" with "conducts" in all of the claims. The words "via" and "leads" are terms of art referring to through holes and terminals. Therefore, the usage appearing in the claims is confusing.

Treatment of Claims Based on Prior Art

7. 35 USC 102 includes the following sections which state:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before

the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

8. Claims 1-2, 4 are rejected under 35 USC 102(e) as being clearly anticipated by figure 1 of Feilchenfeld et al. (US 6006428, hereafter Feilchenfeld).

9. Claims 11 and 14 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by cavity (118) of figure 10.

Additionally, claim 11 is also clearly anticipated by opening (176,178) of figure 10.

10. 35 USC 103(a) states:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Obviousness under 35 USC 103(a) is determined against a background established by the factual inquires set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), which are summarized in items 1-4 below.

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. This application currently names joint inventors. In considering patentability of the claims under 35 USC 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the

contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 USC 103(c) and potential 35 USC 102(f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 3, 7 and 10 are rejected under 35 USC 103(a) as being unpatentable over Feilchenfeld.

These claims are the method counterparts to claims 1-2 and 4, and additionally recite laminating and press bonding the conductive layers, then etching them to form a conductor pattern. Figure 1 discloses a structure which teaches all of the method steps except for laminating and press bonding the conductive layers, etching them to form a conductor pattern and forming the through holes with a laser beam. Nevertheless, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to make the conductive layers with laminating, press bonding and etching to form the circuitry, and to form the through holes with a laser beam, because these manufacturing methods are well known and routine in the art.

Allowable Subject Matter

13. Claims 15 and 18 are allowed. While it is well known to form a pad at an open end of a through hole and place a solder ball thereupon, the prior art does not suggest such a configuration where a covering pad covers the other end of the through hole. Imasu et al. (US 6208525) discloses this configuration, but was filed after the filing of the present application.


Related Prior Art

14. The following references are considered pertinent to the present application.

Swamy discloses conductive layers connected with a via which has a pad on the periphery and a solder ball on that pad. There is also a solder resist formed over the via as shown in figure 3.

Closing

15. Any inquiries related to the examination of this application should be directed to Ex. K. Cuneo at (703) 308-1233 or her supervisor Ex. J Gaffin at (703) 308-3301. Inquiries of a general nature should be directed to the receptionist of Group 2800 at (703) 308-0956. The fax numbers for Group 2800 are (703) 305-7722 and 7724.


K. Cuneo
Patent Examiner Group 2841
July 1, 2001